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Sphecapatoclea avdatica, a new species of Sarcophagidae (Diptera) from the Middle East

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Abstract: *Sphecapatoclea avdatica*, a new species of Sarcophagidae (Diptera) from the Middle East. *Misc. Pap*. 197: 1-5.
Sphecapatoclea avdatica Verves Yu., Khrokalo et Verves K. **sp. n**. was described based on a female from Israel, and our knowledge of the other Middle Eastern species, *Sphetapatoclea excisa* Villeneuve, 1909 is reviewed. An original key for four Middle Eastern species of *Sphecapatoclea* Villeneuve, 1909 is given. All 16 species from this genus are listed.

Keywords: Diptera, Sarcophagidae, *Sphecapatoclea*, key, Israel, new species

Introduction

Subtribe Phrosinellina Rohdendorf, 1967 includes 18 species from two genera: *Alusomyia* Villeneuve, 1933 with 2 species – *A. transfuga* Villeneuve, 1933, distributed in Egypt and north part of Afrotropical region (Niger) and *A. turana* (Rohdendorf, 1975) from Turkmenistan, and Palaearctic *Sphecapatoclea* Villeneuve, 1909 with 16 species. All species are very xerophilous and psammophilous and mainly distributed in arid and subarid zones. Trophic connections of larvae are almost entirely unknown. The larvae of *Sphecapatoclea* sp. feed on paralyzed caterpillars bred in soil nest of sphecid wasp *Ammophila occipitalis* F. Morawitz, 1890 (Myartzeva, 1972).

Methods

The present study is based on specimens deposited in the Tel Aviv University, Israel. Taxonomic concepts follow previous works by the authors (Verves, 1986, 1989; Verves & Khrokalo, 2006; Verves *et al*., 2015).

All photographs were prepared using a stereomicroscope (Leica M205C, Leica Microsystems, Wetzlar, Germany) with a Canon EOS 5D Mark II body camera (Canon Inc., Tokyo, Japan). As a mount was essentially not flat, a series of photographs were made at different focal depths. They were compiled into one sharp image, in accordance with the criterion of maximal power in the spatial high frequency domain, with the software Helicon Focus Pro 5.3.14 X64 (Helicon Soft Ltd., Kharkiv, Ukraine).

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Abbreviations

Abbreviations of morphological features are given (Merz & Haenni, 2000): *acr* – acrostichal seta; *ad* – anterodorsal seta; *ap* – apical seta; *d* – discal seta; *dc* – dorsocentral seta; *dm-cu* – discal medial cubital crossvein; *fr* – frontal seta; *ia* – intraalar seta; *kepst* – katepisternal seta; *marg* – marginal seta; *M* – medial vein; *mm* – mediomarginal seta; *npl* – notopleural seta; *oc* – ocellar seta; *orb* – orbital seta; *postorb* – postorbital seta; *pprn* – postpronotal seta; R_1 – first longitudinal vein; R_{4+5} – third longitudinal vein; r_{4+5} – first posterior cell; t_2 – middle tibia; *vi* – vibrissa; *vte* – outer vertical seta; *vti* – inner vertical seta.

Results

Subfamily Miltogramminae Brauer et Bergenstamm, 1889

Brauer & Bergenstamm, 1889: 76, 112 (as “Miltogrammatidae”)

Tribe Phyllotelini Rohdendorf, 1935

Rohdendorf, 1935: 96 (as “Phyllotelina”)

Subtribe Parthomyiina Rohdendorf, 1967

Rohdendorf, 1967: 70.

Frons and facials very widened, genae high, vibrissal angles distinctly deposed above of oral margin (figs 1B-D, 2B-D); thoracal chaetom consists from numerous shortened setae (figs 1A, 2A); cell r_{4+5} closed or petiolate (figs 1E, 2E).

Genus *Sphecapatoclea* Villeneuve, 1909

Sphecapatoclea Villeneuve, 1909: 155. Type species: *Sphecapatoclea excisa* Villeneuve, 1909, by monotypy.
Sphecapatoclea: Pape, 1996: 142 (catalog); Rohdendorf, 1975: 211 (revision); Séguy, 1941: 244 (in key); Szpila, Akbarzadeh & Pape, 2017: 130, 131 (Fig. 1), 134 (fig. 5), descriptions of the first instar larvae; Verves, 1986: 106 (catalog).
Parthomyia Rohdendorf, 1925: 82. Type species: *Parthomyia iranica* Rohdendorf, 1925, by original designation.
Parthomyia: Rohdendorf, 1975b: 202 (revision); Verves, 1986: 105 (catalog); 1990: 520 (in key), 544 (key to East Palaearctic species).
Paraparthomyia Rohdendorf, 1925: 85. Type species: *Paraparthomyia mujunkumensis* Rohdendorf, 1925, by original designation.

Grey colored flies (figs 1A, 2A) of medium size (5.5-9.0 mm). Frons distinctly broader than eye, frontal stripe strongly narrowed anteriorly, *orb* 1+1-7, fine; flagellomere 1.2-1.8× as long as pedicel (figs 1B-D, 2B-D). Presutural *acr* and *dc* absent (figs 1A, 2A).

16 psammophilous and xerophiolous species distributed in arid zones of Palaearctic region: *S. alashanica* (Rohdendorf, 1975); *S. armenica* (Rohdendorf, 1975); *S. avdatica* Verves Yu., Khrokalo & Verves K., sp. n.; *S. beludzhistanica* (Rohdendorf, 1925); *S. excisa* Villeneuve, 1909; *S. gerasimovi* (Rohdendorf, 1975); *S. ghoulensis* Rohdendorf, 1975; *S. iranica* (Rohdendorf, 1975); *S. karakumensis* Rohdendorf, 1975; *S. kizylkumensis* Rohdendorf, 1975; *S. minor* Villeneuve, 1912; *S. mujunkumensis* (Rohdendorf, 1925); *S. nartshukae* (Rohdendorf & Verves, 1980); *S. turanica* (Rohdendorf, 1975); *S. uzbekistanica* (Rohdendorf, 1975); *S. zimini* (Rohdendorf, 1975).

Key to Middle Eastern species

1. Distance between lower end of antenna and base of angular *vi* distinctly shorter than length of antennomere (fig. 1C, 2C) 2.
- Distance between lower end of antenna and base of *vi* distinctly longer than length of antennomere 4.
2. 5th abdominal tergite with 3 well developed black hind spots (fig. 1A); *orb* 1+2–3, long and strong (fig. 1A-D). 7.0–8.5 mm *S. excisa* Villeneuve, 1909
- 5th abdominal tergite without spots (fig. 2A, 2F) 3.
3. *orb* 1+1–2, fine. 8.5–9.0 mm. Egypt *S. ghoulensis* Rohdendorf, 1975
- *orb* 1+5–7, formed 2 rows (fig. 2 B-D). 8.5 mm *S. avdatica* Verves Yu. Khrokalo, Verves K. **sp. n.**
4. 5th tergite with 3 dark posterior spots. 7.0 mm. Iran (Beluchistan).

S. beludzhistanica (Rohdendorf, 1925)

- 5th tergite with a pair of dark lateral posteriuor bands. 8.5 mm. Iran (Beluchistan)
S. iranica (Rohdendorf, 1925)

***Sphetapatoclea excisa* Villeneuve, 1909** (Fig. 1)

Sphetapatoclea excisa Villeneuve, 1909: 257 (♀). Type localities: Egypt: Sinai: Wadi Chaschibi & Wadi Timan.
Sphetapatoclea excisa: El-Hawagry & El-Azab, 2019: 19 (faunistic); Koçak & Kemal, 2015: 351(faunistic); Pape, 1996: 143 (catalog); Rohdendorf, 1935: 91 (description of ♂ and redescription of ♀);1975: 212 (in key), 213 (diagnose of ♂ and ♀); Verves, 1986: 106 (catalog); Verves & Khrokalo, 2018: 22 (faunistic).

Material

Israel: 1 ♂, 2 km W Ein Mor, 22.04.1986, coll. A. Freidberg; 2 ♂, Palestine, Wadi Nafk, 23.04.1955, coll. O.Theodor; 1 ♂, Avdat, 1.05.1975, coll. A.Freidberg (TAU).

Distribution

Palaearctic: Egypt (Sinai), Israel (firstly recorded).

***Sphecapatoclea avdatica* Verves Yu., Khrokalo et Verves K. sp. n.** (Fig. 2)

http://zoobank.org/urn:lsid:zoobank.org:act:0B22BF84-903D-4916-A7B8-E3878CC49F66

Material

Holotype: ♀, Israel, Avdat, 19.04.1975, A. Freidberg leg., to be deposited in Entomological Collection of Tel Aviv University, Israel.

Description

Adult (♀): Body length 8.5 mm. Head fuscous, almost entirely densely light grey pollinated, frontal vitta above antennal base brownish black, without dusting; scapus and pedicel yellowish brown, flagellomere black, widened part of arista black, its apical narrowed part brown. Palpi blackish brown. Frons at vertex 0.50×, at level of antennal base 0.47× of head-width. Frontal vitta 3.0× widened backwards, at level of fore *orb* 1.2× as wide as one of parafrontals. Flagellomere 1.3× as long as pedicel, arista widened in basal 0.3, with very short setae, strongly longer than flagellomere. Parafacials at level of antennal base 0.26×, genae 0.24× of eye-height. Palpi long, at apex strongly widened. 2 regular rows of *postorb*; *vte* strong, 0,5 as long as *vti*; *oc* middle long and strong; *orb* 1+5–7, formed 2 irregular rows by different length: 2-3 pairs elongate, another short, hair-liked; *fr* 11–12, middle long, in fore part of frons crossed. Parafacials and parafrontals with irregular short black hairs, above of *vi* 2–3 short black bristles present, oral bristles short and numerous, genae and occiput with long erect black setae. Thorax black, light grey pollinated, longitudinal stripes of mesonotum very narrow, linear, scutellum and humerals brownish. Thorax densely short haired; *acr* 0+1; *dc* 2-3+4-5, only prescutellar pair long and strong; *ia* 0+1; *pprn* 2-3; *npl* 2, notopleuron with 2-3 black setae near fore bristle; *kepst* 1+1; katepisternum setose, propleuron bare. Scutellum with 3 pairs of strong *marg* (*ap* crossed) and 2 pairs of more short and fine *d*. Wings hyaline, withour drawing; basicosta and epaulett yellow. Costal spine absent, r_{4+5} short petiolate, R_1 bare, R_{4+5} with 2–3 short basal setae, *M* right-angled, *dm-cu* slightly *s*-liked curved, the ratio of 3rd and 5th costal sections is 1:1.4. Legs yellow, slightly grey dusted, tarsi black; t_2 with one *ad*. Abdomen in greater part yellowish red, densely yellowish grey pollinated, each of 1-2nd – 5th tergites with 3 brownish red spots; median spot of 3rd tergite brownish black, reached to 0.5 tergital length; median spot of 4th tergite very small, all spots of 5th tergite very small too. 1+2nd abdominal tergite without *marg*, 3rd tergite with short *mm*. 6th tergite entire, with a full row of *marg*. Postabdomen reddish, light pollinated. ♂ unknown.

Diagnosis

Related to *S. turanica* (Rohdendorf, 1975) and *S. zimini* (Rohdendorf, 1975) by proportions of head, brownish red abdominal drawing and almost entirely yellow legs, but differs by numerous proclinate *orb*, strong parafrontal and parafacial cetae and fuscous palpi.

References

Brauer, F. & J. E. Bergenstamm, 1889, Die Zweiflügler des Kaiserlichen Museums zu Wien IV. Vorarbeiten zu einer Monographie der Muscaria Schizometopa (exclusive Anthomyiidae). Pars I. *Denkschriften der Kaiserlichen Akademie der Wissenschaften. Mathematisch-naturwissenschaftliche Classe* 56: 69–180 + 11 pls.

El-Hawagry, M. S. & S. A. El-Azab, 2019, Catalog of the Calliphoridae, Rhiniidae, and Sarcophagidae of Egypt (Diptera: Oestroidea). *Egyptian Journal of Biological Pest Control* 29: 1–50.

Koçak, A.Ö. & M. Kemal, 2015, Initial results of the entomofauna of SW Asia, based upon the info-system of the Cesa (excl. Lepidoptera). *Priamus* Suppl. 35: 1–1186.

Merz B. & J. P. Haenni, 2000. *Morphology and terminology of adult Diptera (other than terminalia), In*: Papp, L. & B. Darvas (Eds). *Contributions to a Manual of Palaearctic Diptera (with special reference to flies of economic importance).* Vol. 1, General and Applied Dipterology: 21-51. Science Herald, Budapest.

Myartzeva, S. N., 1972, The parasites and predators of the sphecoid wasps of Turkmenia. *In*: Tokgaev, T. & S. N. Myartzeva (Eds), 1972, *Insects of Southern Turkmenia* (Ashkhabad): 101–115 [in Russian with English subtitle].

Pape, T., 1996, Catalogue of the Sarcophagidae of the world (Insecta: Diptera). *Memoirs of Entomology International* 8: 1-558.

Rohdendorf, B. B., 1925, Miltogramminen–Studien I (Dipt., Tachinidae). *Zoologischer Anzeiger* 62 (3–4): 80–85.

Rohdendorf, B. B., 1935, Sarcophaginae. *In*: Lindner, E. (Ed.), *Die Fliegen der Paläarktischen Region* 11: 49–128. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart.

Rohdendorf, B. B., 1967, The directions of historical development of sarcophagids (Diptera, Sarcophagidae). *Proceedings of the Paleontological Institute, USSR Academy of Sciences* 116: 1-91 [in Russian with English summary].

Rohdendorf, B. B., 1975, Sarcophaginae. *In*: Lindner, E. (Ed.), Die *Fliegen der Paläarktischen Region* 11: 177–232. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart.

Séguy, E., 1941, Études sur les mouches parasites. Tome 2. Calliphorines (suite), sarcophagines et rhinophorides de l'Europe occidentale et meridionale. Recherches sur la morphologie et la distribution géographique des Diptères à larves parasites. *Encyclopèdie entomologique* (Sér. A) 21: 1-436.

Szpila, K., Akbarzadeh, K. & T. Pape, 2017, First description of the first instar larva of *Sphecapatoclea* and *Sphecapatodes* (Diptera: Sarcophagidae). *Zoologischer Anzeiger* 266: 129–135.

Verves, Yu. G., 1986, Family Sarcophagidae. *In*: Soós, Á. & Papp, L. (Eds), *Catalogue of Palaearctic Diptera* 12: 58–193. Akadémiai Kiadó, Budapest; Elsevier, Amsterdam.

Verves, Yu. G., 1989, The phylogenetic systematics of the miltogrammatine flies (*Diptera*, *Sarcophagidae*) of the world. *Japanese Journal of Medical Sciences and Biology* 42: 111–126.

Verves, Yu. G., 1990, A key to *Sarcophagidae* (*Diptera*) of Mongolia, Siberia and neighbouring territories. - Insects of Mongolia 11: 516–616 [in Russian with English subtitle].

Verves, Yu. G. & L. Khrokalo, 2006, Family Sarcophagidae. *In*: Sidorenko, V. (Ed.), *Key to Insects of Russian Far East* 6 (4): 64–178. Nauka, Vladivostok.

Verves, Yu. G. & L. A. Khrokalo, 2018, The Sarcophagidae (Diptera) of the Middle East. *Zoology in the Middle East* 64: 273–282 (Supplemental Material: 1–27).

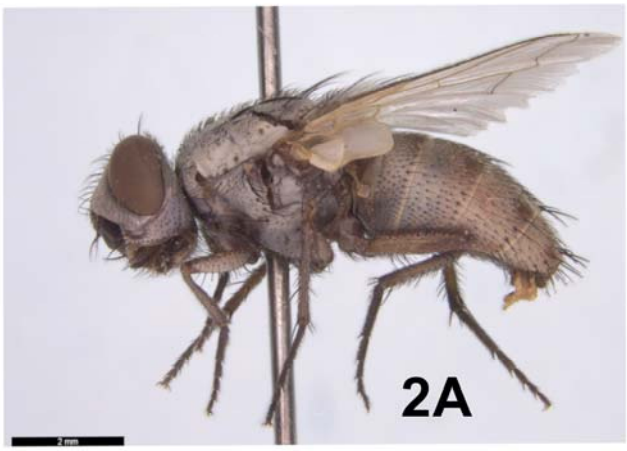
Verves, Yu. G., Radchenko, V. & L. Khrokalo, 2015, A review of species of subtribe Apodacrina Rohdendorf, 1967 with description of a new species of *Apodacra* Macquart, 1854 from Turkey (Insecta: Diptera: Sarcophagidae: Miltogramminae: Miltogrammini). *Turkish Journal of Zoology* 39 (2): 263–278.

Villeneuve, J. 1909 [No titled]. In: Hermann, F. Diptera aus der Sinaihalbinesel. *Verhandelingen der naturwissenschaftliche Vereins in Karlsruhe* 21: 147–159.

Abbreviations to figures:

Fig. 1. *Sphetapatoclea excisa,* ♀; Fig 2. *S. avdatica,* ♀. A – habitus laterally; B – head laterally; C – head anteriorly; D – head dorsally; E – wing; F – abdomen dorsally; G–H – labels.

1A


2A

1B

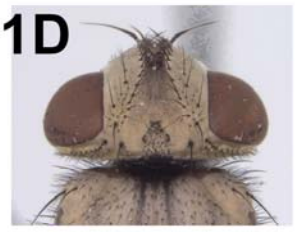
2B

1C

2C

1E

2E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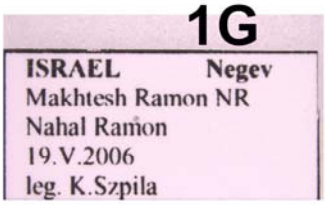
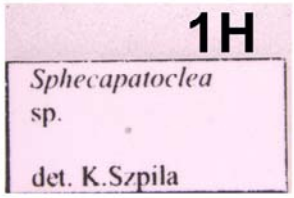
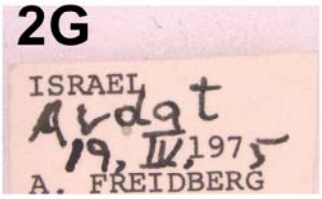

1G
ISRAEL Negev
Makhtesh Ramon NR
Nahal Ramon
19.V.2006
leg. K.Szpila


1H
Sphecapatoclea
sp.
det. K.Szpila

2F

2D


2G
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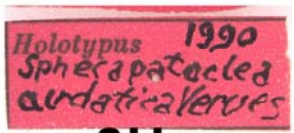
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Sphecapatoclea
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